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Played by Labor
in the Transition
from Ape to Man

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INTERNATIONAL PUBLISHERS, NEW YORK



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INTERNATIONAL PUBLISHERS

NEW YORK

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PRINTED IN THE U.S.A.

NOTE: The present essay, written in 1876 and planned originally as part of an extensive study on the forms of servitude, was never completed by Engels. The reader will find that it breaks off in the middle of a sentence.

THE PART PLAYED BY LABOR IN THE TRANSITION FROM APE TO MAN

Labor is the source of all wealth, the political economists assert. It is this, next to nature, which supplies it with the material that it converts into wealth. But it is even infinitely more than this. It is the prime basic condition for all human existence, and this to such an extent that, in a sense, we have to say that labor created man himself.

Many hundreds of thousands of years ago, during an epoch, not yet definitely determinable, of that period of the earth's history which geologists call the Tertiary period, most likely towards the end of it, a specially highly developed race of anthropoid apes lived somewhere in the tropical zone — probably on a great continent that has now sunk to the bottom of the Indian Ocean. Darwin has given us an approximate description of these ancestors of ours. They were completely covered with hair, they had beards and pointed ears, and they lived in bands in the trees.

Presumably as an immediate consequence of their mode of life, which in climbing assigns different functions to the hands than to the feet, these apes when walking on level ground began to drop the habit of using their hands and to adopt a more and more erect posture. This was *the decisive step in the transition from ape to man*.

All extant anthropoid apes can stand erect and move about on their feet alone, but only in case of urgent need and in a very clumsy way. Their natural gait is in a half-erect posture

and includes the use of the hands. The majority rest the knuckles of the fist on the ground and, with legs drawn up, swing the body through their long arms, much as a cripple moves with the aid of crutches. In general, we can today still observe among apes all the transition stages from walking on all fours to walking on two legs. But for none of them has the latter method become more than a makeshift.

For erect gait among our hairy ancestors to have become first the rule and in time a necessity presupposes that in the meantime diverse other functions increasingly devolved upon the hands. Even among the apes there already prevails a certain division in the employment of the hands and feet. As already mentioned, in climbing the hands are used differently from the feet. The former serve primarily for the collection and grasping of food, as already occurs in the use of the forepaws among lower mammals. Many monkeys use their hands to build nests for themselves in the trees or even, like the chimpanzee, to construct roofs between the branches for protection against the weather. With their hands they seize hold of clubs to defend themselves against enemies, or bombard the latter with fruits and stones. In captivity, they carry out with their hands a number of simple operations copied from human beings. But it is just here that one sees how great is the distance between the undeveloped hand of even the most anthropoid of apes and the human hand that has been highly perfected by the labor of hundreds of thousands of years. The number and general arrangement of the bones and muscles are the same in both; but the hand of the lowest savage can perform hundreds of operations that no monkey's hand can imitate. No simian hand has ever fashioned even the crudest of stone knives.

At first, therefore, the operations for which our ancestors gradually learned to adapt their hands during the many thousands of years of transition from ape to man could have been only very simple. The lowest savages, even those in whom a

regression to a more animal-like condition with a simultaneous physical degeneration can be assumed to have occurred, are nevertheless far superior to these transitional beings. Before the first flint could be fashioned into a knife by human hands, a period of time may have elapsed in comparison with which the historical period known to us appears insignificant. But the decisive step was taken: *the hand had become free* and could henceforth attain ever greater dexterity and skill, and the greater flexibility thus acquired was inherited and increased from generation to generation.

Thus the hand is not only the organ of labor, *it is also the product of labor*. Only by labor, by adaptation to ever new operations, by inheritance of the thus acquired special development of muscles, ligaments and, over longer periods of time, bones as well, and by the ever-renewed employment of this inherited finesse in new, more and more complicated operations, has the human hand attained the high degree of perfection that has enabled it to conjure into being the pictures of a Raphael, the statues of a Thorwaldsen, the music of a Paganini.

But the hand did not exist by itself. It was only one member of an entire, highly complex organism. And what benefited the hand, benefited also the whole body it served; and this in two ways.

In the first place, the body benefited in consequence of the law of correlation of growth, as Darwin called it. According to this law, particular forms of separate parts of an organic being are always bound up with certain forms of other parts that apparently have no connection with the first. Thus all animals that have red blood cells without cell nuclei, and in which the back of the head is attached to the first vertebra by means of a double articulation (condyles), also without exception possess lacteal glands for suckling their young. Similarly, cloven hoofs in mammals are regularly associated with the

possession of a multiple stomach for rumination. Changes in certain forms involve changes in the form of other parts of the body, although we cannot explain this connection. Perfectly white cats with blue eyes are always, or almost always, deaf. The gradually increasing perfection of the human hand and the commensurate adaptation of the feet for erect gait have undoubtedly, by virtue of such correlation, reacted on other parts of the organism. However, this action has as yet been much too little investigated for us to be able to do more here than to state the fact in general terms.

Much more important is the direct, demonstrable reaction of the development of the hand in the rest of the organism. As already said, our simian ancestors were gregarious; it is obviously impossible to seek the derivation of man, the most social of all animals, from non-gregarious immediate ancestors. The mastery over nature, which began with the development of the hand, with labor, widened man's horizon at every new advance. He was continually discovering new, hitherto unknown, properties of natural objects. On the other hand, the development of labor necessarily helped to bring the members of society closer together by multiplying cases of mutual support, joint activity, and by making clear the advantage of this joint activity to each individual. In short, men in the making arrived at the point where *they had something to say* to one another. The urge created its organ; the undeveloped larynx of the ape was slowly but surely transformed by means of modulation in order to produce constantly more developed modulation, and the organs of the mouth gradually learned to pronounce one articulate letter after another.

Comparison with animals proves that this explanation of the origin of language from and in the process of labor is the only correct one. The little that even the most highly developed animals need to communicate with one another can be communicated without the aid of articulate speech. In a state of

nature, no animal feels handicapped by its inability to speak or to understand human speech. It is quite different when it has been tamed by man. The dog and the horse, by association with man, have developed such a good ear for articulate speech that they easily learn to understand any language within the range of their circle of ideas. Moreover they have acquired the capacity for feelings such as affection for man, gratitude, etc., which were previously foreign to them. Anyone who has had much to do with such animals will hardly be able to escape the conviction that there are plenty of cases where they *now* feel their inability to speak is a defect, although, unfortunately, it can no longer be remedied owing to their vocal organs being too specialized in a definite direction. However, where the organ exists, within certain limits even this inability disappears. The buccal organs of birds are, of course, as different from those of man as can be, yet birds are the only animals that can learn to speak; and it is the bird with the most hideous voice, the parrot, that speaks best of all. Let no one object that the parrot does not understand what it says. It is true that for the sheer pleasure of talking and associating with human beings, the parrot will chatter for hours at a stretch, continually repeating its whole vocabulary. But within the limits of its circle of ideas it can also learn to understand what it is saying. Teach a parrot swear words in such a way that it gets an idea of their meaning (one of the great amusements of sailors returning from the tropics); tease it and you will soon discover that it knows how to use its swear words just as correctly as a Berlin costermonger. Similarly with begging for tidbits.

First labor, after it and then with it speech — these were the two most essential stimuli under the influence of which the brain of the ape gradually changed into that of man, which for all its similarity is far larger and more perfect. Hand in hand with the development of the brain went the development of its most immediate instruments — the sense organs. Just as

the gradual development of speech is inevitably accompanied by a corresponding refinement of the organ of hearing, so the development of the brain as a whole is accompanied by a refinement of all the senses. The eagle sees much farther than man, but the human eye sees considerably more in things than does the eye of the eagle. The dog has a far keener sense of smell than man, but it does not distinguish a hundredth part of the odors that for man are definite signs denoting different things. And the sense of touch, which the ape hardly possesses in its crudest initial form, has been developed only side by side with the development of the human hand itself, through the medium of labor.

The reaction on labor and speech of the development of the brain and its attendant senses, of the increasing clarity of consciousness, power of abstraction and of judgment, gave both labor and speech an ever-renewed impulse to further development, a development which, far from reaching its conclusion when man finally became distinct from the monkey, continued on the whole to make powerful progress, varying in degree and direction among different peoples and at different times, and here and there even interrupted by local or temporary regression. This further development has been strongly urged forward, on the one hand, and guided along more definite directions, on the other hand, by a new element which came into play with the appearance of fully fledged man, namely, *society*.

Hundreds of thousands of years — of no greater significance in the history of the earth than one second in the life of man* — certainly elapsed before human society arose out of a troupe of tree-climbing monkeys. Yet it did finally appear. And what

* A leading authority in this respect, Sir William Thomson, has calculated that *little more than a hundred million years* could have elapsed since the time when the earth had cooled sufficiently for plants and animals to be able to live on it.

do we find once more as the characteristic difference between the troupe of monkeys and human society? *Labor*. The ape band was satisfied to browse over the feeding area determined for it by geographical conditions or the resistance of neighboring bands; it undertook migrations and struggles to win new feeding grounds, but it was incapable of extracting from them more than they offered in their natural state, except that the band unconsciously fertilized the soil with its own excrements. As soon as all possible feeding grounds were occupied, further increase of the monkey population could not occur; the number of animals could at best remain stationary. But all animals waste a good deal of food, and, in addition, destroy in germ the next generation of the food supply. Unlike the hunter, the wolf does not spare the doe which would provide it with kids the next year; the goats in Greece, which graze down the young bushes before they grow up, have eaten bare all the mountains of the country. This "predatory economy" of animals plays an important part in the gradual transformation of species by forcing them to adapt themselves to other than the usual food, thanks to which their blood acquires a different chemical composition and the whole physical constitution gradually alters, while species that were once established die out. There is no doubt that this predatory economy has powerfully contributed to the transition of our ancestors from ape to man. In a race of apes that far surpassed all others in intelligence and adaptability, this predatory economy could not help leading to a continual increase in the number of plants used for food and to the devouring of more and more edible parts of alimentary plants. In short, it led to the food becoming more and more varied, hence also the substances entering the body, the chemical premises for the transition to man. But all that was not yet labor in the proper sense of the word. Labor begins with the making of tools. And what are the most ancient tools that we find — the most ancient judging by the heirlooms of

prehistoric man that have been discovered, and by the mode of life of the earliest historical peoples and of the rawest of contemporary savages? They are hunting and fishing implements, the former at the same time serving as weapons. But hunting and fishing presuppose the transition from an exclusively vegetable diet to the concomitant use of meat, and this is another important step in the process of transition from ape to man. A *meat diet* contained in an almost ready state the most essential ingredients required by the organism for its metabolism. It shortened the time required, not only for digestion, but also for the other vegetative bodily processes corresponding to those of plant life, and thus gained further time, material and desire for the active manifestation of animal life in the proper sense of the word. And the farther man in the making moved from the plant the higher he rose above the animal. Just as becoming accustomed to a plant diet side by side with meat converted wild cats and dogs into the servants of man, so also adaptation to a meat diet, side by side with a vegetable diet, considerably contributed to giving bodily strength and independence to man in the making. The most essential effect, however, of a meat diet was on the brain, which now received a far richer flow of the materials necessary for its nourishment and development than formerly, and which, therefore, could develop more rapidly and perfectly from generation to generation. With all respect to the vegetarians it has to be recognized that man did not come into existence without a meat diet, and if the latter, among all peoples known to us, has led to cannibalism at some time or other (the forefathers of the Berliners, the Weletabians or Wilzians, used to eat their parents as late as the tenth century), that is of no consequence to us today.

The meat diet led to two new advances of decisive importance: to the harnessing of fire and the domestication of animals. The first still further shortened the digestive process, as it pro-

vided the mouth with food already, as it were, semi-digested; the second made meat more copious by opening up a new, more regular source of supply in addition to hunting, and moreover provided, in milk and its products, a new article of food at least as valuable as meat in its composition. Thus both these advances became directly new means of emancipation for man. It would lead us too far afield to dwell here in detail on their indirect effects notwithstanding the great importance they have had for the development of man and society.

Just as man learned to consume everything edible he also learned to live in any climate. He spread over the whole of the habitable world, being the only animal completely possessing the capacity to do so by itself. The other animals that have become accustomed to all climates — domestic animals and vermin — did not become so independently, but only in the wake of man. And the transition from the uniformly hot climate of the original home of man to colder regions, where the year was divided into summer and winter, created new requirements: shelter and clothing as protection against cold and damp, new spheres of labor and hence new forms of activity, which further and further separated man from the animal.

By the co-operation of hands, organs of speech and brain, not only in each individual but also in society, human beings became capable of executing more and more complicated operations, and of setting themselves, and achieving, higher and higher aims. With each generation labor itself became different, more perfect, more diversified. Agriculture was added to hunting and cattle raising; then spinning, weaving, metal-working, pottery, and navigation. Along with trade and industry there appeared finally art and science. From tribes there developed nations and states. Law and politics arose, and with them the fantastic mirror image of human things in the human mind: religion. In the face of all these creations, which

appeared in the first place as products of the mind and which seemed to dominate human societies, the more modest productions of the working hand retreated into the background, the more so since the mind that planned the labor already at a very early stage of development of society (for example, already in the primitive family), was able to have the labor that had been planned carried out by other hands than its own. All merit for the swift advance of civilization was ascribed to the mind, to the development and activity of the brain. Men became accustomed to explain their actions from their thoughts instead of from their needs (which in any case are reflected and come to consciousness in the mind); and so there arose in the course of time that idealistic outlook on the world which, especially since the end of the ancient world, has dominated men's minds. It still rules them to such a degree that even the most materialistic natural scientists of the Darwinian school are still unable to form any clear idea of the origin of man, because under this ideological influence they do not recognize the part that has been played therein by labor.

Animals, as already indicated, change external nature by their activities just as man does, even if not to the same extent, and these changes made by them in their environment, as we have seen, in turn react upon and change their originators. For in nature nothing takes place in isolation. Everything affects every other thing and vice versa, and it is usually because this all-sided motion and interaction is forgotten that our natural scientists are prevented from clearly seeing the simplest things. We have seen how goats have prevented the regeneration of forests in Greece; on the island of St. Helena, goats and pigs brought by the first arrivals have succeeded in exterminating its old vegetation almost completely, and so have prepared the ground for the spreading of plants brought by later sailors and colonists. But if animals exert a lasting effect on their environ-

ment it happens unintentionally and, as far as the animals themselves are concerned, it is an accident. The further removed men are from animals, however, the more their effect on nature assumes the character of premeditated, planned action directed towards definite ends known in advance. The animal destroys the vegetation of a locality without realizing what it is doing. Man destroys it in order to sow field crops on the soil thus released, or to plant trees or vines which he knows will yield many times the amount sown. He transfers useful plants and domestic animals from one country to another and thus changes the flora and fauna of whole continents. More than this. Through artificial breeding both plants and animals are so changed by the hand of man that they become unrecognizable. The wild plants from which our grain varieties originated are still being sought in vain. The question of the wild animal from which our dogs are descended, the dogs themselves being so different from one another, or our equally numerous breeds of horses, is still under dispute.

In any case, of course, we have no intention of disputing the ability of animals to act in a planned, premeditated fashion. On the contrary, a planned mode of action exists in embryo wherever protoplasm, living albumen, exists and reacts, that is, carries out definite, even if extremely simple, movements as a result of definite external stimuli. Such reaction takes place even where there is as yet no cell at all, far less a nerve cell. The manner in which insectivorous plants capture their prey appears likewise in a certain respect as a planned action, although performed quite unconsciously. In animals the capacity for conscious, planned action develops proportionally to the development of the nervous system, and among mammals it attains quite a high level. While fox hunting in England one can daily observe how unerringly the fox knows how to make use of its excellent knowledge of the

locality in order to elude its pursuers, and how well it knows and turns to account all favorable features of the ground that cause the scent to be lost. Among our domestic animals, more highly developed thanks to association with man, every day one can observe acts of cunning on exactly the same level as those of children. For, just as the developmental history of the human embryo in the mother's womb is only an abbreviated repetition of the history, extending over millions of years, of the bodily evolution of our animal ancestors, starting from the worm, so the mental development of the human child is only a still more abbreviated repetition of the intellectual development of these same ancestors, at least of the later ones. But all the planned action of all animals has never contrived to impress the stamp of their will upon the earth. For that, man was required.

In short, the animal merely *uses* external nature, and brings about changes in it simply by his presence; man by his changes makes it serve his ends, *masters* it. This is the final, essential distinction between man and other animals, and once again it is labor that brings about this distinction.

Let us not, however, flatter ourselves overmuch on account of our human victories over nature. For each such victory it takes its revenge on us. Each of them, it is true, has in the first place the consequences on which we counted, but in the second and third places it has quite different, unforeseen effects which only too often cancel the first. The people who, in Mesopotamia, Greece, Asia Minor, and elsewhere, utterly destroyed the forests to obtain cultivable land never dreamed that they were laying the basis for the present devastated condition of these countries, by removing along with the forests the collecting centers and reservoirs of moisture. When the Italians of the Alps used up the pine forests on the southern slopes, so carefully cherished on the northern slopes, they had no inkling that by doing so they were cutting at the roots of the dairy

industry in their region; they had still less inkling that they were thereby depriving their mountain springs of water for the greater part of the year, and making it possible for them to pour still more furious torrents of it on the plains during the rainy seasons. Those who spread the potato in Europe were not aware that with these farinaceous tubers they were at the same time spreading scrofula. Thus at every step we are reminded that we by no means rule over nature like a conqueror over a foreign people, like someone standing outside nature — but that we, with flesh, blood and brain, belong to nature, and exist in its midst, and that all our mastery of it consists in the fact that we have the advantage over all other creatures of being able to know and correctly apply its laws.

And, in fact, with every day that passes we are learning to understand these laws more correctly, and getting to perceive both the more immediate and the more remote consequences of our interference with the traditional course of nature. In particular, after the mighty advances of natural science in the present century, we are more and more placed in a position where we can learn to know, and hence to control, even the more remote natural consequences of at least our most ordinary productive activities. But the more this happens the more will men not only feel but also know their oneness with nature, and the more impossible will become the senseless and unnatural idea of a contrast between mind and matter, man and nature, soul and body, such as arose in Europe after the decline of classical antiquity and which obtained its highest elaboration in Christianity.

But if it has already required the labor of thousands of years for us to learn, to some extent, to calculate the more remote *natural* effects of our actions directed toward production, it has been still more difficult in regard to the more remote *social* effects of these actions. We mentioned the potato and the resulting spread of scrofula. But what is scrofula in

comparison with the effect which the reduction of the workers to a potato diet had on the living conditions of the masses of the people in whole countries or in comparison with the famine which overtook Ireland in 1847 in consequence of the potato blight, and which consigned to the grave a million Irishmen, nourished solely or almost exclusively on potatoes, and forced the emigration overseas of two million more? When the Arabs learned to distill alcohol, it never entered their heads that by so doing they were creating one of the chief weapons for the annihilation of the aborigines of the then still undiscovered American continent. And when afterwards Columbus discovered this America, he did not know that by doing so he was giving a new lease of life to slavery, which in Europe had long ago been done away with, and laying the basis for the Negro slave trade. The men who in the seventeenth and eighteenth centuries labored to create the steam engine had no idea that they were preparing the instrument which more than any other was to revolutionize social conditions throughout the world. Especially in Europe, by concentrating wealth in the hands of a minority, the huge majority being rendered propertyless, this instrument was destined at first to give social and political domination to the bourgeoisie, and then, however, to give rise to a class struggle between bourgeoisie and proletariat which can end only in the overthrow of the bourgeoisie and the abolition of all class antagonisms. But in this sphere, too, by long and often cruel experience and by collecting and analyzing the historical material, we are gradually learning to get a clear view of the indirect, more remote, social effects of our productive activity, and so the possibility is afforded us of controlling and regulating these effects as well.

However, to effectuate this regulation requires something more than mere knowledge. It requires a complete revolution in our hitherto existing mode of production, and with it of our whole contemporary social order.

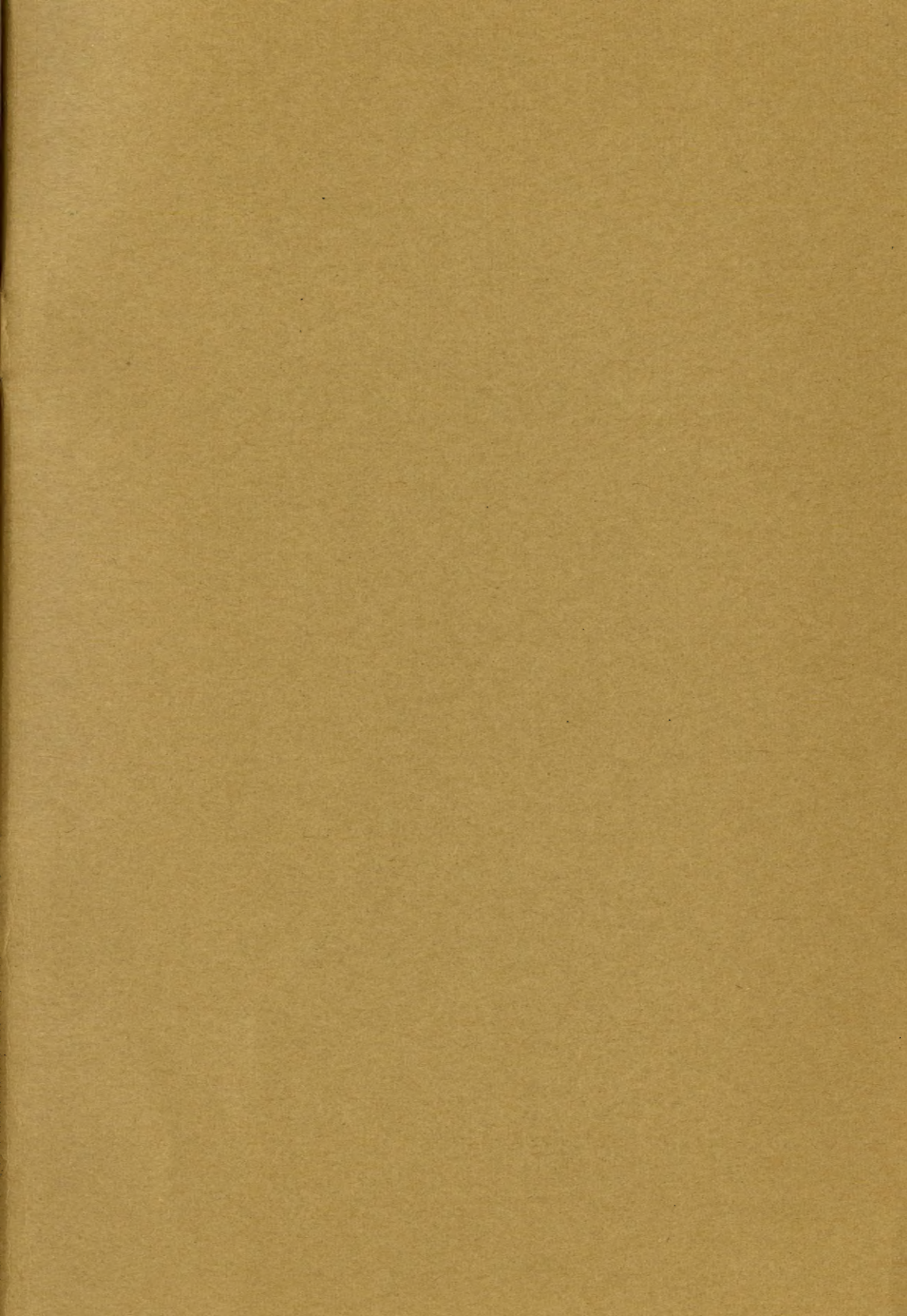
All hitherto existing modes of production have aimed merely at achieving the most immediately and directly useful effect of labor. The further consequences, which appear only later on and become effective through gradual repetition and accumulation, were totally neglected. The original common ownership of land corresponded, on the one hand, to a level of development of human beings in which their horizon was restricted in general to what lay immediately at hand, and presupposed, on the other hand, a certain superfluity of available land, allowing a certain latitude for correcting any possible bad results of this primeval type of economy. When this surplus land was exhausted, common ownership also declined. All higher forms of production, however, led to the division of the population into different classes and thereby to the antagonism of ruling and oppressed classes. Thus the interest of the ruling class became the driving factor of production, in so far as the latter was not restricted to the barest means of subsistence of the oppressed people. This has been carried through most completely in the capitalist mode of production prevailing today in Western Europe. The individual capitalists, who dominate production and exchange, are able to concern themselves only with the most immediate useful effect of their actions. Indeed, even this useful effect — inasmuch as it is a question of the usefulness of the article that is produced or exchanged — retreats right into the background, and the sole incentive becomes the profit to be made on selling.

The social science of the bourgeoisie, classical political economy, is predominantly occupied only with the directly intended social effects of human actions connected with production and exchange. This fully corresponds to the social organization of which it is the theoretical expression. As individual capitalists are engaged in production and exchange for the sake of the immediate profit, only the nearest, most immedi-

ate results can be taken into account in the first place. As long as the individual manufacturer or merchant sells a manufactured or purchased commodity with the usual coveted profit, he is satisfied and does not concern himself with what afterwards becomes of the commodity and its purchasers. The same thing applies to the natural effects of the same actions. What cared the Spanish planters in Cuba, who burned down forests on the slopes of the mountains and obtained from the ashes sufficient fertilizer for *one* generation of very highly profitable coffee trees — what cared they that the heavy tropical rainfall afterwards washed away the now unprotected upper stratum of the soil, leaving behind only bare rock! In relation to nature, as to society, the present mode of production is predominantly concerned only about the first, the most tangible result; and then surprise is expressed that the more remote effects of actions directed to this end turn out to be of quite a different, mainly even of quite an opposite, character; that the harmony of supply and demand is transformed into their polar opposites, as shown by the course of each ten years' industrial cycle, and of which even Germany has experienced a little preliminary in the "crash";* that private ownership based on one's own labor necessarily develops into the propertylessness of the workers, while all wealth becomes more and more concentrated in the hands of non-workers: that [. . .]†

* Engels refers to the economic crisis of 1873-74. — *Ed.*

† Here the manuscript breaks off. — *Ed.*



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